# Visually Impaired Pedestrian Access to Modern Roundabouts: Current Initiatives at FHWA

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# The Visually Impaired

- 1.3 million legally blind people in 1996
- Of these, approximately 107,000 use canes, another 7,000 use dogs
- About ½ have full-time employment
- Approximately 100,000 travel independently

# Problem Identification

People who are blind have difficulty using roundabout crosswalks because:

1. Motorists do not frequently yield to pedestrians at uncontrolled crossings
2. Noise from circulating traffic can make aural detection of gaps problematic
3. Crossable *and* detectable gaps are rare when volume is high

# ADA Requirements

- Federal Law enacted in 1990
- Requires new and altered facilities constructed by, on behalf of, or for use of state and local government entities be design to be readily accessible to and *usable* by people with disabilities

# What does this mean for Roundabout Design?

- Pedestrians should be able to easily locate the crosswalk
- They should be able to detect when it is safe to cross
- They should have proper guidance to stay in the crosswalk (avoid drift)
- They should be able to detect the destination sidewalk or splitter island

# Potential Solutions

- Use of pedestrian activated signals such as the Hawk system
- Improved pedestrian warning signs
- Geometric modifications of roundabout crosswalk design and/or landscaping
- The use of auditory cues to alert visually impaired pedestrians
- ITS applications (auto detection systems)

# FHWA Roundabout Accessibility Study

Two Experiments are planned to evaluate the concept of auditory noise strips in the pavement:

1. Closed course controlled laboratory experiment. Cars driven by experimenters
2. Field experiment at an existing double-lane roundabout with heavy volume vehicular traffic

# Closed Course Experiment

- A double-lane roundabout will be simulated in at the TFHRC facility in McLean, VA
- A set of 3 noise strips will be placed on the approach to the crosswalk
- Blind participants (n=10) will indicate when one or two vehicles have yielded

# Field Experiment

- Place auditory noise strips at an existing double-lane roundabout
- Install “Yield to Pedestrians” sign R1-6 between 2 lanes adjacent to the exit crosswalk
- Monitor driver yielding behavior to blind participants using video surveillance
- Identify when blind participants detect a yield

# Study Goals

- Quantify motorists' yielding behavior at double-lane roundabouts
- Evaluate effectiveness of pedestrian warning signs on motorists' yielding behavior
- Assess the feasibility of using auditory noise strips to assist the visually impaired
- Results due in Fall 2004

# For More Information


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# References


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- Roundabouts:  An Informational Guide FHWA Publication RD-00-067
- American Foundation of the Blind (www.AFB.org)